Radio User
Standard Operating Procedures

Introduction

Radio communications in all its forms is vital to the efficiency and safety within SAR operations; this is particularly true during SAR incidents and training in harsh weather conditions.

It is a truism that good knowledge and use of communications are fundemental to SAR and as a valuable skill as any other needed by team members. Communications problems are often blamed on equipment or systems' failure but more often than should be the case, the problem lies with the operator. Each team member must strive to become a proficient communicator who can get the best performance form the radio equipment and be able to manipulate and improvise where the situation demands – so that the message really can get through when it matters

Operating a two way radio is an art in which personality plays an important part. Proper voice procedure training will provide radio operators with the basic knowledge of how to improve their skills in the use of two-way radio communication.

Even the best radio system can suffer from interference, because of this it is possible that others cannot hear anything that is said. Therefore it is of utmost importance that proper voice procedure is used to save time.

Radio Users Course

There are two Radio courses held within KSAR , These courses will provide users with the correct procedures and protocols to carry out Radio Communication Effectively and efficiently during KSAR operations

- Radio User – For all personnel operating radios within search teams

- Advanced Radio User - For all personnel operating radios within the Control Vehicle

Radio User

This course is designed to prepare Search Team radio users for communication to and from control on the network – it will include the following :

- Radio protocol
- License Conditions
- Radio License Regulations
- Call signs
- Radio Checks
- Radio Messages
- Code Words
- Radio Reports
- Operation of Radios
- Operation of GPS

Advanced Radio User

This course is designed to prepare SearchManagers and Controllers for communication to and from control on the KSAR network – it will include the following :

- Radio protocol
- License Conditions
- Radio License Regulations
- Call signs
- Radio Checks
- Radio Messages
- Code Words
- Radio Reports
- Operation of Radios
- Operation of Control Vehicle equipment
- Antennia and propogation
- Re Broadcasting
- Lost comms Procedure
- Joining other Networks

Protocol

All users are to follow the following protocols when communicating on the KSAR Network

- Radio Messages and traffic should be kept short
- Do not interupt other users – except for priority messages
- Always yield to more important messages
- Use the appropriate Code Words
- Speak Slowly and Clearly
- Use easily understood words
- Avoid ambigiuity

REGULATIONS

Frequency bands - Band widths

Long Wave	Medium Wave	Short Wave – High Frequency	Very High Frequency	Ultra High Frequency
200KHz	1000KHz	2-30MHz	30-300MHz	300MHz – 3GHz

Vhf band - (Very High Frequency)

87.5 MHz – 108 MHz	Broadcast band (classic fm)
144mhz – 146mhz	Amateur radio
156mhz – 156.725mhz	Maritime mobile
156.175 MHz – 162.800 MHz	**Alsar working channels**
173 MHz – 174 MHz	Private business radio

KSAR FREQUENCY 160.825MHz

GENERAL POINTS

- Most vhf bands are channelised
- Frequency allocation is given in the licence
- Frequencies can be shared depending on the area
- Most VHF bands use frequency modulation (FM)
- Air band uses amplitude modulation (AM)
- Band plans are used to make the best use of band space and to avoid interference

ALSAR channel programming

ALSAR Channel	UK-SAR Channel	TX Freq Mhz	RX Freq Mhz	Type	CTCSS	BWidth	Simplex Duplex	Status
1	62a	156.1250	Same	UK-SAR	None	25kHz	Simplex	Emergency Calling Channel - See Note 1
2	62b	160.7250	Same	UK-SAR	None	25kHz	Simplex	Land SAR Working Channel
3	63a	156.1750	Same	UK-SAR	None	25kHz	Simplex	Land SAR Working Channel
4	63b	160.7750	Same	UK-SAR	None	25kHz	Simplex	Land SAR Working Channel
5	64a	156.2250	Same	UK-SAR	None	25kHz	Simplex	Land SAR Working Channel
6	64b	160.8250	Same	UK-SAR	None	25kHz	Simplex	Land SAR Working Channel
7	85a	157.2750	Same	UK-SAR	None	25kHz	Simplex	Land SAR Working Channel
8	85b	161.8750	Same	UK-SAR	None	25kHz	Simplex	Land SAR Working Channel
9	24b	161.8000	Same	UK-SAR	None	25kHz	Simplex	Land SAR Working Channel
10	94	147.4750	155.3500	UK-SAR	118.8Hz	12.5kHz	Duplex	Mobiles, Hand Helds - See Note 2
10	94	155.3500	147.4750	UK-SAR	118.8Hz	12.5kHz	Duplex	Repeater Unit Only- See Note 2
11	53a	158.6500	Same	UK-SAR	None	25kHz	Simplex	See Note 3
12	0	156.0000	Same	UK-SAR	None	25kHz	Simplex	See Note 4
13	73	156.6750	Same	UK-SAR	None	25kHz	Simplex	See Note 5
14	-	164.0500	Same	PBR	103.5Hz	12.5kHz	Simplex	Preferred choice for Training - See Note 6
15	-	164.0625	Same	PBR	131.8Hz	12.5kHz	Simplex	Preferred choice for Training - See Note 6
16	-	169.0875	Same	PBR	141.3Hz	12.5kHz	Simplex	Preferred choice for Training - See Note 6

Legend

Compulsary		Strongly Recommended	For Repeater Use Only -

Notes

1	It is mandatory that this channel be constantly monitored by all land SAR parties, mobiles, base stations and airborne units engaged on land SAR incidents. Maximum authorised operating ceiling is 6.500 feet.
2	Permission to use repeaters must be specifically requested and granted before use. Equipment MUST be capable of operating with a 12.5kHz bandwidth.
3	(Current) Ground-Air-Ground channel. Until all SAR-dedicated helicopters have Marine Band VHF radios with the new band plan installed, this is to be used as the sole Ground to Air (G2A) land SAR Channel. The channel will revert to 12.5kHz band-spacing in 2009. Maximum authorised ceiling is 6.500 feet
4	(1) Remote land SAR parties with medical emergency - for initial contact with transiting SAR helicopters. (2) For making operational contact with HMCG. (3) Under HMCG control, for HMCG land SAR communications
5	Can exceptionally be used as an overflow Ground/Air channel if Channel 53a is too busy. When Ch 24a eventually takes over as the Ground to Air Channel, Ch73 will continue as the G2A overflow and Ch53a (soon to be 12.5kHz bandwidth) will assume another role. Ch73 may be used by land SAR under the direct control of CG MRCC/MRSC. This channel can be used by SAR airborne units for coastal G2A, under HMCG direction.
6	Requires a Public Business Radio Licence available from Ofcom

ALSAR Unit Default frequencies **As of 7th May 2005**

Unit	Callsign	Initial three Channels	Extended Channels	Repeater Use	Default Channel	Radios Ready	ALSAR Channel	Frequency
Bucks Search and Rescue (BSAR)	BSAR	Yes	Yes	Yes	63a		3	156.1750
Cheshire Search and Rescue (Cheshire SAR)	CEESAR	Yes	Yes	Yes	64b **		6	160.8250
Dorset Search and Rescue (DorSAR)	DORSET	Yes	Yes	Yes	64b **		6	160.8250
Essex Search and Rescue (ESSEX SAR)	ESSEX	Yes	Yes	Yes	64a		5	156.2250
Hampshire Search and Rescue (HANTSAR)	HANTSAR	Yes	Yes	Yes	64a	Yes	5	156.2250
Kent Search and Rescue (KSAR)	EKSAR	Yes	Yes	Yes	64b		6	160.8250
Mercia Search and Rescue	MERCIA SAR	No	No	No	...			
Midshires Search and Rescue Organisation (MSAR)	MSAR	Yes	Yes	Yes	62b		2	160.7250
Norfolk Lowland Search and Rescue (NORLSAR)	NORFOLK	Yes	Yes	Yes	63a	Yes	3	156.1750
SEBEV Search and Rescue (SEBEV SAR)	SEBEV	Yes	Yes	Yes	63b	Yes	4	160.7750
Staffs Search and Rescue	SSART	No	No	No	...			
Suffolk Lowland Search and Rescue (SULSAR)	SUFFOLK	Yes	Yes	Yes	24b	Yes	9	161.8000
Sussex Search and Rescue (SUSSAR)	SUSSAR	Yes	Yes	Yes	62b		2	160.7250
Wiltshire Search and Rescue (WILSAR)	WILSAR	Yes	Yes	Yes	24b		9	161.8000

** Temporary default channel

The ALSAR Channel number should be the same as the channel number on your radio

Regulations - Licence conditions

All Radio licences are issued by the Radio Communications Agency – A license has been granted to ALSAR units under the following conditions:

- Radio equipment must be constructed and used in accordance with the licence provisions
- The licensee must ensure that the radio equipment is only used by persons authorised by the licensee and such persons are made aware of, and comply with, the terms of the licence
- The secretary of state may require the station to be closed down if:
    - A breach of licence conditions has occurred
    - The use of the equipment is causing undue interference to other authorised users
- The station can also be closed down in cases of national emergency
- The purpose of the licence is to allow the licensee to send and receive messages between base and mobile stations, and between mobile stations
- Messages must concern only the business of the licensee

Special conditions

- Used for voice transmission only
- Not to send misleading messages
- Not to transmit music, broadcast programmes, offensive or obscene language
- Not to be used as a public address system
- Call signs of calling and called stations must be announced at the beginning of all transmissions

General points

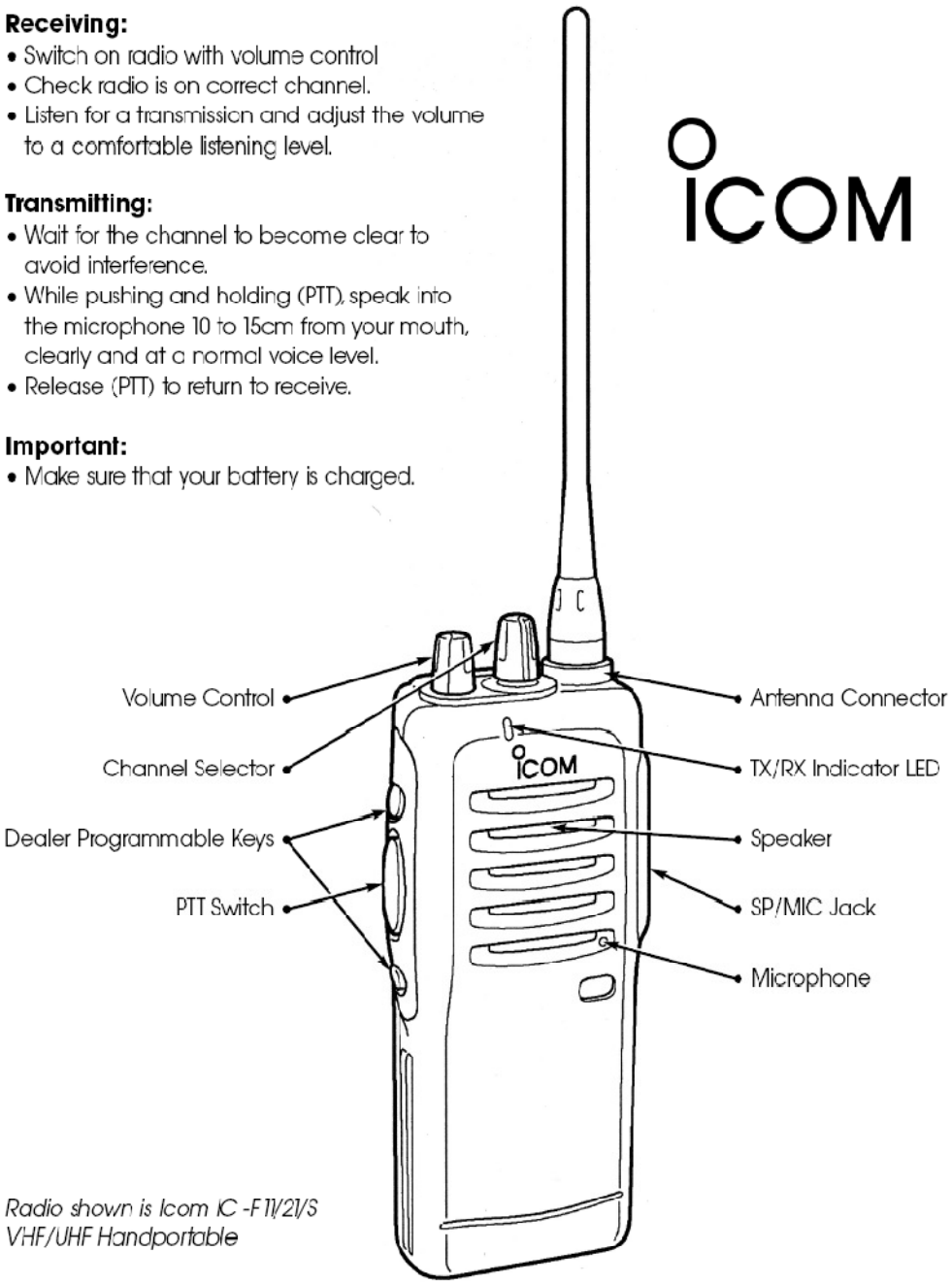
- Radio operators must abide by licence conditions
- It is good operating practice to sound professional at all times
- Be aware that others may be listening to your transmissions
- Keep messages short and to the point

HOW TO USE A RADIO

Receiving:
- Switch on radio with volume control
- Check radio is on correct channel.
- Listen for a transmission and adjust the volume to a comfortable listening level.

Transmitting:
- Wait for the channel to become clear to avoid interference.
- While pushing and holding (PTT), speak into the microphone 10 to 15cm from your mouth, clearly and at a normal voice level.
- Release (PTT) to return to receive.

Important:
- Make sure that your battery is charged.



Radio shown is Icom IC -F11/21/S VHF/UHF Handportable

Explanation

Antenna	helical, used to transmit and receive signals
On/off volume	self explanatory
Channel selector	self explanatory (KSAR = channel 6)
PTT switch	"push to talk". Push when transmitting Release to receive
Microphone/speaker	for transmitting and receiving - do not speak too close and try to shield from high wind
Battery pack	rechargeable, using a desk charger

Hand Set Basics

Battery Preservation

In order to prolong the battery life

- Turn down the volume to a comfortable level
- Adopt a set routine to ensure batteries are fully charged
- Check the terminals on the Battery and the Handset are clean before reconnecting
- Do not short circuit the battery terminals
- Do not drop the battery
- Only use the appropriate charger
- Place spare batteries in plastic bags to ensure that the terminals are insulated.

Security

Loose items will not work properly and can get lost – therefore check:

- The battery is correctly connected
- The aerial connection is secure
- The external loudspeaker – microphone is secure and serviceable

Carrying the Radio

The method of carrying must be – Efficient, Comfortable and offer Protection

A simple and effective means of carrying the radio is to tuck into the top of a rucksack with the aerial sticking vertically out of the top. This fulfils the requirement of height and keeps the radio as far from the body as possible.

It is important that radio is fairly accessible in case of need to carry out adjustments

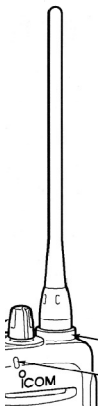
The speaker mike lead should be slack under the arm, allowing body twisting and stretching movement without the lead becoming taut and allowing enough surplus to permit the optimum mouth to mike distance. When receiving the volume should be loud enough to easily cope with the prevailing noise and wind conditions.

Each person should find their own optimum mouth to mike distance and position. It is recommended that the mike be turned side on to the mouth, just to the side of the mouth so that the exhaled air does not create wind noise at a distance of 2-3 inches. Adjust for optimum from that starting position.

Finding and using this position is well worth doing as it can make all the difference between good and unreadable communications – In windy conditions shield the mike with the hand or jacket hood.

Introduction to Radio Equipment

Antennas



Hand Held

These are fitted with helical antennas so as to produce the correct length required for the frequency - but keeping the overhaul length short

They are covered in a plastic sleeve and fitted with a screw in plug

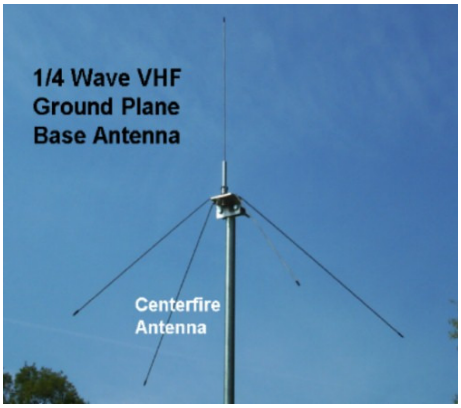
Advantages	Compact and not easily broken
Disadvantage	Not good in low signal areas

Car Mounts

These are fitted to mobile vehicles and may be either a permanent mount or temporary mount which is fitted with a magnetic base plate

Advantages	Better signal as it uses the car body for the earth plane
	Fitted with a longer element – either 1/4, 3/8 or 5/8 wave, with or without a loading coil
Disadvantage	Requires a separate Co axial Feed

Control Mast



By mounting the antenna (Similar to the car mount) on a mast the extra height will achieve a better signal

Doubling the height, quadruples the signal strength

Aerial Theory

It is important for Radio users to understand a little about how the Aerial works in order that you can avoid losses in signal strength:

- VHF Signal radiates from a vertical aerial in all directions
- The nearer the ground the antenna - the more signal is lost to the sky
- Under normal atmospheric conditions VHF signal are propagated in line of sight
- Under certain atmospheric conditions (Temperature Inversions, High Pressure etc)the signal can bounce off of the troposphere causing co channel interference
- VHF Signals can be shielded by people, trees, vehicles, buildings and hills

Aerial Polarisation

- It is advantageous for All aerials to be vertical
- Reflected signals can sometimes change polarisation.
- It may be worthwhile to bend forward or back to change the Aerial direction if the signal is weak – holding where the signal is the strongest

Aerial Height

- Within reason, the higher the aerial above the surrounding ground the greater the range.
- As well as being vertical the aerial should be as high as possible
- To minimise signal absorption keep the aerial as far from the body as possible
- Stand on rocks, mounds or any other structure to gain height

Using Radios in the Control Vehicle

All advanced Radio users should be trained for this demanding task. It is important that operators have had experience in the field and are familiar with the expectation of Search management as well as those teams on the ground.

Comprehensive written logs must be recorded during the search and maintained for 6 years after the incident

It is essential that there is one radio per channel, use the minimum transmit power consistent with adequate communication. The radio should be connected to an elevated aerial with appropriate vertical separation to minimise interference.

Simplex, Half Duplex and Duplex Channels

Simplex channels: These are single channels, rather like a single track road, they can only handle traffic in one direction.

Half Duplex Channels: These are two channels which like dual carriageway roads, send on one channel and receive on another. However the radios (and the users?) can only handle one transmission at a time, and effectively this reduces it to the same throughput as a simplex.

Duplex or Full Duplex: Provides true simultaneous, two-way communications. Although repeaters are capable of this, the terminals and their users are not. Telephones and Mobile Telephones provide a full duplex link.

Radio Procedures

Transmitting Techniques

The necessity for clear speech on two-way radio cannot be over emphasised. Therefore the RSVPC mnemonic provides a simple guide for communications and should be used to enhance better voice procedure and technique.

R RHYTHM
S SPEED
V VOLUME
P PITCH
C CONTENT

Rhythm Maintain the natural rhythm used in conversation to help make the message intelligible, Avoid saying 'er' or 'um'

Speed Speak steadily and at medium speed so as to avoid an unintelligible jumble of words from speaking too quickly or losing rhythm when too slow

When it is known that the recipient will write down an element of the message, leave much larger spaces between short phases. To get an idea how long is required try writing down your own message

Experienced operators will often transmit phases twice when the receiving operator is writing

Volume Speak at an ordinary conversational level to avoid distortion with the mike-to-mouth distance kept constant. Without sacrificing rhythm, every word should be clearly spoken and the voice must not fade away on the last part of the phase.

Pitch Use a pitch that is a little higher than usual to aid reception, especially in poor conditions. Maintain an even pitch, being especially conscious of the last syllable of words where the natural tendency is to lower the pitch

Content Think about what is going to be said and how it can be said before pressing the transmit button.

A good maxim is 'Select brain before engaging mouth' The radio is for communicating but, particularly during busy incidents, consider whether the message is really necessary; un important messages can wait until later.

Never the less during exercises and at other times Radio Voice procedure practise is essential and operators should be at ease when using the Radio.

There are two basic considerations when talking on the air.

- **WHAT TO SAY -** Voice procedure
- **HOW TO SAY IT** Voice Technique

WHAT IS VOICE PROCEDURE?

Voice procedure is a set of rules designed to provide **SECURITY, ACCURACY** and **DISCIPLINE** when speaking on the radio.

SECURITY

- Think before you speak.
- Use correct procedure
- Be brief

ACCURACY

The necessity for clear speech on two-way radio cannot be over emphasised. Therefore it is important that the correct RSVP system. The use of Standard Reports and Code words enhance the accuracy of information.

DISCIPLINE

Radio discipline is the responsibility of every operator, and should adhere to the following:

- Listen before you speak.
- Use correct voice procedure.
- Maintain constant radio watch.
- Answer all calls promptly.
- Keep the airways free of unnecessary talk.
- Be brief and to the point

PROWORDS

Pro words are used to indicate specific meaning that replaces abbreviated sentences or phrases.

ACKNOWLEGE	Respond now indicating that you have received and understood a message ok n- (Response Roger, Say Again)
AFFIRMATIVE	This means YES normally used when a question is asked and the reply is YES.
ALL AFTER	Used with "Say again" Meaning to repeat parts of message after a specific word e.g. say all after boy.
ALL BEFORE	Used with "Say again" To repeat parts of a message before a specific word e.g. say all before Wood
ALL BETWEEN	Used with "Say again" to define the part of the message to be repeated – do not use unless it is related to a written message
ALL STATIONS	Call sign for all stations on the radio net
BE ADVISED	Universal pro word for imparting information either directly or from third parties – less formal than message
COPIED	I intercepted that message for me that was sent to you this is not the same as roger
CORRECTION	An error was made in my message so here is the correct version - Note include the text phase before and after the incorrect part
DISREGARD THIS	Ignore what I have just said - this should not be used for a message that has been completely transmitted
EMERGENCY, EMERGENCY, EMERGENCY,	I have a message of **Life threatening** Importance – by implication unnecessary transmissions must cease
EXEMPT	The following message does not apply to the station named
EXERCISE, EXERCISE, EXERCISE,	Used to indicate that the following message is exercise play no a real situation
FIGURES	Figures follow – used if there is a chance of ambiguity – but if a Grid reference is to follow use the Pro word **GRID**
FROM	The originator of the message
GRID	A Grid reference to follow
IN CONTACT WITH	I am in contact with call sign – and can relay for you
I READ BACK	Repeating all or the specified part of this message exactly as received so that you can check I have received it correctly
I SAY AGAIN	I repeat all or specified part of a message to clarify or emphasise.
I SPELL	I will spell the next word or group of words phonetically. (See Phonetic Alphabet)
LONG MESSAGE	What follows is a long message – are you ready to write it down

OVER	
MESSAGE	You may have to write down details from this transmission. This should not normally be needed when speaking to control
MESSAGE PASSED	I have passed your message- used when relaying an informational message
MINIMISE	Reduce transmission – to essential messages only
NEGATIVE	This means NO and is normally used when a question is asked and the reply is NO, or Incorrect or permission not granted or unable to comply
NO DUFF	Used during training to indicate what follows is not part of the training and not exercise play – but is a real situation
NOTHING HEARD	To be used when no reply has been heard from a called station – used after two failed attempts to make contact
OUT	I have completed my transmission and no reply is required.
OUT TO YOU	I have completed my transmission with you but about to transmit straightaway to another call sign
OVER	I have completed my transmission and you can now reply
PASS YOUR MESSAGE	Pass your message – note replaces send and go ahead
PRIORITY, PRIORITY, PRIORITY	I need to interrupt as I have a message of importance – by implication unnecessary transmissions must cease
READ BACK	Repeat all, or the specified part of this message back to me exactly as received so that I can check you have received it correctly
RELAY THROUGH ME	Relay your message through me – this is an offer to relay a message
RELAY TO	Relay this message to all addressees
ROGER	Your message is received and understood. *This pro word can be used with either OVER or OUT) e.g. "Roger Over" or "Roger Out" Depending on which is applicable*
SAY AGAIN	Meaning repeat your last transmission.
STAND BY	Wait for a short period and I will get back to you.
THIS IS	The call sign of the transmitting station follows.
TIME	A time follows
UNKNOWN	A simple request to a query
UNKNOWN CALLSIGN	The identity of the station that has contacted me is unknown
VERIFY	Check back with the originator of the message to confirm the whole or specific parts of the message.
WAIT	Wait a moment while I deal with something else or find the answer to your request - an amounts of minutes can be added e.g. "Wait 2"

WILCO	I understand your message and will comply with it – usually followed with "Out"
WORD AFTER	Used with "Say again" to define the word to be repeated
WORD BEFORE	Used with "Say again" to define the word to be repeated

BASIC RADIO TELEPHONY (R/T) PROCEDURE

The following has been formulated from best practise and is intended to promote standardised R/T within KSAR

Call Signs

Team Call Signs

We use standard call signs for each search team:

Control Vehicle

Control

Foot Search Teams

XR1 – Search Team 1
XR2 – Search Team 2…… etc

Mobile Search Teams

Mobile 1 – Mobile Search Team 1
Mobile 2 – Mobile Search Team 2 ….etc

Mountain Bike Teams

MB1 – Mountain Bike Search Team 1
MB2 – Mountain Bike Search Team 2…… etc

Water Search Teams

WS1 – Water Search Team 1
WS2 – Water Search Team 2…… etc

Team Position Call Signs

It may be necessary from time to time to refer to a team member by their role – these can also be used if the team has to split

XR1 A Team Leader of Search Team 1
XR1 B Radio Operator of Search Team 1
XR1 C Team Medic of Search Team 1
XR1 D, E…..Additional Team members of Search Team 1

Identification of Specific Stations

General call sign for all teams is "***All Stations***" **-** Call signs **should respond** in order

"Hello All stations this is Control ……., over"

"*XR1 OK, over", "XR2 OK, over"* **-** If a call sign did not respond the first time – Control would call them again

"*Unknown Station*" – should be used when it is not known who has been heard or who is calling

Establishing Contact

An initial call should be made and received in the following manner – with the station being called repeated

"***XR1 this is Control, over"***

"This is" should be used for every transmission – It is worthwhile justifying the reasons for this:

- It takes ½ second to say
- Much clearer than "From"
- International Standard

Because it is expected in every transmission, it is instantly recognisable even in poor reception conditions. It opens the radio's squelch and the receiving ear has synchronised by the time the call sign following it, is spoken. "This is" gives the brain the moment it needs to compose the rest of the message

After the initial call the called station is omitted but the calling station continues to give its call sign. This means that even when another call sign comes into range, it can be certain who is calling at any stage of the exchange.

A typical exchange would be:

"XR1 this is Control over"

"Control this is XR1 over"

"This is Control wait for XR2 at GRID TQ12345 67890 over"

"This is XR1, roger, out"

Often when traffic between call signs is **light and the path known to be satisfactory**, there is no need to carry out the initial transmission as described above. Use the call sign and then pass your message.

The ends of message words are

"Over"	used when a response is expected, or
"Out"	used when a response is neither expected nor required

They should never be used together to conclude a message as they contradict each other.

If following the repetition of an initial transmission to establish contact no reply is received finish by using:

"XR1 this is control nothing heard out"

In this case this would probably be followed by

"Hello All Stations this is Control is anyone in contact with XR1 over"

Radio Checks

Test transmissions should be carried out before leaving or a short distance from Control. This checks the serviceability of the set and confirms to control which call signs have deployed.

The International Telecommunication Union (ITU) dictates the standard of reporting signal readability strength and tone. This system for HF operation has three scales, 1 – 5 for readability and 1 – 9 for strength and tone. The tone report does not apply in the case of voice transmissions; this is used only in Morse.

Whenever an initial radio check call is made the receiving station needs to inform the other station making the request how the receiving signal is being heard. To do this the following scale should be used:

Readability

1 Unreadable.
2 Barely readable some words now & then.
3 Readable with considerable difficulty.
4 Readable with practically no difficulty
5 Perfectly readable (Loud & Clear)

Signal strength

1 Faint signals
2 Very weak signals
3 Weak signals
4 Fair signals
5 Fairly good signals
6 Good signals
7 Moderately strong signals
8 Strong signals
9 Extremely strong signals

An example of a radio check

"Control this is XR1 radio check over"

"XR1 this is control 5 – 6 over

"This is XR1 4-5 out"

Should it be anything inferior to 3-4 then it is up to the operator to carry out a comprehensive serviceability check and the carry out a further radio check

Station temporarily unable to deal with a message

If an operator is unable to deal with a message immediately then **"Wait"** may be used
An example of this:

"XR1 this is Control message over"

"Control this is XR1 wait out"

The sender must wait a short time (seconds) until the operator is ready
If the delay is very brief (less than up to 5 Seconds) then you can just say "wait" and then continue

"Control this is XR1 wait"…….. "XR1 send over"

If the delay is to be longer than about 30 Seconds then the "wait" should be appended with the number of minute's e.g.

"Control this is XR1 wait 5 out"

Operators should avoid the overuse of this pro word

Repetition

Use the Pro word "**Say Again" to** request repetition of all or part of the transmission.
This may be made more specific by using the following pro words

"All After"

"All before"

"All between"

"Word After"

"Word Before"

Examples of this are:

"XR1 this is Control change of plan, go to area 1 via the green route and rendezvous with XR2 over"

"Control this is XR1 Say again over" or ……

"Control this is XR1 Say again All after green route over" or ….

"Control this is XR1 Say again All before green route over" or ….

"Control this is XR1 Say again All between plan and XR2 over" or ….

"Control this is XR1 Say again Word after via the .. over" or ….

"Control this is XR1 Say again Word before route over"

Verification

Use the Pro word "**Verify"** to request verification and "**Read Back**" to make sure that the message has been received correctly.

An example of this is:

"Control this is XR1 my current location is Grid 12345 67890 over"

"XR1 this is Control verify Grid 12345 67890 over"

"Control this is XR1 correct over" .....

If the Grid had been wrong:

"Control this is XR1 my current location is Grid 12345 67890 over"

"XR1 this is Control verify Grid 13345 67890 over"

"Control this is XR1 negative.. I Say again Grid 12345 67890 over"

If there is still doubt then:

"Control this is XR1 my current location is Grid 12345 67890 over"

"XR1 this is Control verify Grid 13345 67890 over"

"Control this is XR1 negative.. I Say again Grid 12345 67890 Read back Grid 12345 over"

"XR1 this is Control I Read back Grid 12345 over"

"Control this is XR1 correct out"

Using a Relay

If communications between two stations is difficult or unworkable, it may be possible to use another station to act as a relay.

Use **"Relay to", "Through me", "From"** and **"Out to you" .**

An example of this is:

"XR1 this is Control report your position over"

Wait 5 Seconds

"XR1 this is Control report your position over"

Wait 5 Seconds – then request a relay through a call sign that is known to be in contact with XR1

"XR2 this is Control Relay to XR1 report your position over"

* **"Control this is XR2, roger, out to you"** ……

"XR1 this is XR2 from Control report your position over"

"XR2 this is XR1 my location is Grid 12345 67890 over"

* **"XR1 this is XR2 your location is Grid 12345 67890, out to you"**

"Control this is XR2 from XR1 location is Grid 12345 67890 over"

"XR2 this is Control Roger out"

* When communications are good these acknowledgements could be left out. If it is a message not requiring an answer then the relay should contact the originator and state "**Message passed"**

Offering to Relay

A call sign may offer to pass a message by using **"In contact with "**

An example of this is:

"XR1 this is Control report your position over"

Wait 5 Seconds

"XR1 this is Control report your position over"

Wait 5 Seconds – then request a relay through a call sign that is known to be in contact with XR1

"Control this is XR2 I am In contact with XR1, relay through me over"

"XR2 this is Control relay to XR1 send position over"

Etc……

Priority and radio Silence

From time to time messages have to be passed that are off a higher priority than routine calls. In these cases the following pro words should be used to break in transmissions. Stations that are not in the interchange must remain silent until the message has been passed.

The pro words "**Priority, Priority, Priority**" or "**Emergency, Emergency, Emergency"** (for life threatening situations). By implication unnecessary transmissions must cease.

An example of this:

> **"Priority, Priority, Priority, Control this is XR1 Code Red over"**

Radio Silence can exceptionally be imposed by any station with an emergency, although it would normally be Control.

An example of this:

> **"All stations except XR1 this is control, Silence, Silence, Silence out"**

If there is a need to restrict the radio traffic to essential transmissions then the pro word "**Minimise"** should be used.

To lift the Radio Silence:

> **"All stations this is control, Silence lifted, Silence lifted out"**

Long Messages

From time to time messages or reports are fairly long and will require a break to ensure that the sent part has been received correctly, instead of getting to the end of the message and having to use repetitions. The pro word to be used is **"So far"**

Examples of this are:

Message requiring sending

> **"XR1 this is Control change of plan, go to Area 1 via the green route and rendezvous with XR2 and combine with them to make one team and carry out a search of Area 1**

Send as:

> **"XR1 this is Control change of plan, go to Area 1 via the green route So Far"**

To confirm that the have received and understood the sent part of the message XR 1 should confirm by using the pro word “So Far” if not use the repetition pro words mentioned earlier

“XR1 So Far”

Continue the message:

“Rendezvous with XR2 and combine with them to make one team So Far”

“So Far”

“Carry out a search of Area 1 over”

“XR1 Roger out”

Transmission of Letters and Numbers

Letters

The words in the table below are used when individual letters have to be transmitted or words spelt. For spelling you should use the pro word “**I Spell”**

A	ALPha	**B**	BRAvo	**C**	CHARlie	**D**	DELta	**E**	ECHo
F	FOXtrot	**G**	GOLf	**H**	hoTEL	**I**	INDia	**J**	juliET
K	KILo	**L**	LIma	**M**	MIke	**N**	noVEMber	**O**	OSCar
P	paPA	**Q**	queBEC	**R**	ROMeo	**S**	siERRa	**T**	TANgo
U	UNIform	**V**	VICtor	**W**	WHISkey	**X**	X-Ray	**Y**	YANKee
Z	ZUlu								

When pronouncing these words the syllables should be emphasised as shown above.

Numbers

All numbers must be transmitted by pronouncing each digit separately as shown in the table below.

Grid references are given as individual digits and preceded by either **Figures** or **Grid**.

0	Zero	**1**	Wun	**2**	Too	**3**	Tree	**4**	Fo-wer
5	Fife	**6**	Six	**7**	Seven	**8**	Ate	**9**	niner

Note: surprisingly “two” and “three” are often confused with each other. Emphasise them and be particularly careful with their pronunciation.

The following are specific forms for certain types of numbers

Round hundreds and thousands – use **“hun dred”** and **“thousand”** respectively

A number such as 5.7 say “**Five, dayseemal seven”**

Times should be given in the twenty-four hour clock form
“Time zero seven hun dred” = 0700 hrs or
“Time wun niner tree zero” = 1930 hrs

Code words

KSAR uses standard Codeword to inform other stations of sensitive information

CODE ORANGE	-	Clue or Evidence found
CODE RED	-	Person/Body found
CODE RED PLUS	-	Missing Person found
CODE PURPLE	-	Suspected Dead
CODE PURPLE PLUS	-	Confirmed Dead
KILO ALPHA	-	Ambulance Service
KILO DELTA	-	Doctor
KILO FOXTROT	-	Fire and Rescue Service
KILO PAPA	-	Police

Transmission of Reports

KSAR uses standard report formats in order to ensure:

- That the necessary information is sent
- The format is the same for the operator and receiver
- The standard report forms can be used in Control to record the information

The following Reports are currently used

- **CASREP** – A report on causalities
- **CLUEREP** – A report on clues or evidence found
- **CONTREP** – A report used to give the description of a person
- **LOCSAT** – A report that is used to give details of the teams current location
- **PODREP** – A report that is used to give control details to calculate the POD
- **SITREP** – A report that is used to give the teams current situation details
- **TASKREP** – A report to give the details of a teams progress of a task

Offering a Report

A report should be offered if the recipient is expected to write it down – Normally report are offered by teams or requested by control

KSAR uses standard report formats in order to ensure:

- That the necessary information is sent
- The format prompts for the required information
- It prevents the need to write down information before sending
- The receiver knows the format of the information being sent
- It provides a form for control to record the data

An example of this:

"Control this is XR1 CASREP over"

"XR1 this is Control send CASREP over"

"XR1 CASREP Alpha 1, Bravo Grid TQ12345 67890 .....over"

Or if control was not ready they could send the following:

"XR1 this is Control wait 1 out"

Example of a CASREP

A report on causalities - This report may be proceded by the Code Word if this is applicable **:**

Code Red - PERSON OR BODY FOUND

"Control this is XR1 CODE RED wait out"

If there is heavy traffic is heavy it may be necessary to **break in** transmissions. Stations that are not in the interchange must remain silent until the message has been passed.

CASREP		Serial No :	
Call Sign :	XR1	Date/Time:	
A	No of Casualties	One	
B	Casualty Location Grid Reference	GRID TQ 12345 67890	
C	Description and Condition of Causality (if more than one prefix with the No i.e. 1….. 2….)	Male Mid sixties, unconscious, breathing, Hypothermic, Weak Irregular pulse	
D	Treatment of Causality (if more than one prefix with the No i.e. 1….. 2….) Include if the Ambulance have been called	KA Called ETA 8mins, RV Track junction Grid TQ 12334 67880, Casualty sheltered and being warmed	
E	Resources Required	Stretcher and Blankets	
F	RV for Resources	Grid TQ 12344 67898	
G	Any other relevant info	Empty Paracetamol Blister Pack found by Casualty Items seized by Team, Clue Rep to follow	

Example of a CLUEREP

A report on clues or evidence found, This report may be proceded by the Code Word :

Code Orange - CLUE OR EVIDENCE FOUND

"Control this is XR1 CODE ORANGE wait out"

If there is heavy traffic is heavy it may be necessary to used to **break in** transmissions? Stations that are not in the interchange must remain silent until the message has been passed.

CLUEREP		Serial No :	
Call Sign :	XR1	Date/Time:	
A	Clue Location Grid	GRID TQ 12345 67890	
B	Description of Clue (if more than one prefix with the No i.e. 1….. 2….)	Dark Blue Tee Shirt, Medium Size , with a White Umbro Logo on left hand breast, no other visible marks	
C	Any other relevant Info	No other visible marks	
Send the above to Control and Await further Instructions			
D	How clue is marked	Red and White Mine tap	
E	RV for KP (include direction of approach)	N/A	
F	Evidence Bag ID No (If more than one prefix with the No i.e. 1….. 2….)	A1234567	
G	Any other relevant Info	Evidence Seized by KSAR No 114	

Example of a CONTREP

A report used to give the description of a person

CONTREP		Serial No :	
Call Sign :	XR1	Date/Time:	
A	**Age** (Give 5 year brackets e.g. 30-35)	60	
B	**Build** (Slim, Medium, Heavy etc.)	Slim	
C	**Clothing**	Blue Rain Jacket, Red Sweatshirt, Blue Jeans, White Trainers	
D	**Distinguishing** Features	Nil	
E	**Elevation** (Height. Give in ft and inches e.g.6'4")	6'	
F	**Face** (Round, Long Chubby etc)	Round	
G	**Gate** (Posture, Hurried, Calm, Nervous etc)	Shuffling	
H	**Hair** (Including facial hair)	White Medium Length, Straight	
I	**Information** Any Other	Car Reg W345 NOT Red Renault Clio	

Example of a LOCSTAT

A report that is used to give details of the team's current location

LOCSTAT		Serial No :	
Call Sign :	XR1	Date/Time:	
A	Grid	TQ 12345 67890	
B	Description	Track	
C	Direction of Travel	East	
D	Any Other Info	Nil	

Example of a PODREP

A report that is used to give control details to calculate the POD of a search area

CLUEREP		Serial No :	
Call Sign :	XR1	Date/Time:	
A	Search Route/Area	Area 1	
B	No of Searchers	4	
C	Track Line Length in Metres	6000	
D	Sweep Width in Metres	10	
E	Significant difficulties during Search of Route/Area	Fast flowing stream running East to West through the area	
F	Local Hazards	Steep banks by Railway on Western edge	

Example of a SITREP

A report that is used to give the teams current situation details.

It should tell the story of events and its main goal is to give control a comprehensive picture of how the situation is progressing and your intended outcome.

SITREP		Serial No :	
Call Sign :	**XR1**	**Date/Time:**	
A	**Search Area/Grid Ref** (where)	**Area 1 - TQ 12345 67890**	
B	**Description of situation** (what)	**Casualty has been stabilised and ready to be evacuated to the RV with KA**	
C	**What actions have been taken** (what you are doing)	**Casualty's leg has been splinted and the casualty has been packaged onto stretcher**	
D	**What actions need to be taken** (what you need to do)	**Combined stretcher team of XR1 and XR2 to carry out extraction**	
E	**What resources or help required** (what you need)	**N/A**	
F	**Any other relevant info**	**ETA RV minutes 15**	

Example of a TASKREP

A report that is used to give the team's current progress on a task

TASKREP		Serial No :	
Call Sign :	XR1	Date/Time:	
A	Search Area/Route Name	Area 1	
B	% Task Complete	60	
C	Estimated Time to Completion of Task in minutes	45	
D	Any other relevant info	Progress slow due to thick undergrowth – Team beginning to tire	

Common Radio Equipment Faults

EQUIPMENT FAILURE	
Problem	**Remedial Action**
Unable to hear any transmissions	Radio not Switched on – Turn Handset on
Unable to hear any transmissions	Wrong Frequency set – Change Frequency
POOR RECEPTION	
Causes	**Remedial Action**
Shielded by People, Cars, Buildings, Hills and Mountains	Move location
Distance between Stations	Move Location or use the Relay procedure
Damage or loose Antenna	Repair or replace the Antenna and then check that it is tight
Mouth too close/too far away	Move the Mike away from the mouth – Approx 1 -1½" from Mouth - 45° angle – Speak slowly and clearly
Talking too loud/too soft	Speak in a firm monotone voice
Interference	
Causes	**Remedial Action**
Too many users talking at once	Wait until the Channel is clear before transmitting – If you have a priority or an emergency – use the correct **Break In** procedure –Always yield to more urgent or emergency channels
Background Wind/Noise	Move away from the noise and turn your back to the wind.